OP-A-20

A CROSS-SECTIONAL STUDY TO ASSESS BETA CELL FUNCTION IN YOUNG ONSET TYPE 2 DIABETES MELLITUS (T2DM)

https://doi.org/10.15605/jafes.036.S20

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INTRODUCTION
Young-onset type 2 diabetes (T2D) is a heterogenous subset with variable clinical characteristics, disease progression, risk of complications and therapeutic response. This study aimed to examine beta cell function of these patients early in the disease using basal and stimulated C-peptide. We also looked at the association between metabolic parameters and diabetes complications with C-peptide levels.

METHODOLOGY
A dual center cross-sectional study was conducted in 113 young-onset T2D between 18 to 35 years of age, with a maximum disease duration of 5 years and negative diabetes autoantibodies. Plasma basal and stimulated C-peptide was measured before and 6 minutes after intravenous injection of 1 mg glucagon.

RESULTS
The median (interquartile range) of basal and stimulated C-peptide was 619.0 (655.0) pmol/L and 1231.0 (1024) pmol/L, respectively. Majority of our patients had adequate basal and stimulated beta cell function (85.8% basal and 77.9% stimulated). More than half of these patients were on insulin therapy. When the insulin-treated subgroup was analysed, 77.0% had adequate basal and 69.7% had adequate stimulated beta cell function. Multivariable linear regression analysis showed hypertension and obesity as independent predictors of high basal and stimulated C-peptide levels. There was also a significant independent association between the presence of nephropathy and higher basal C-peptide levels, but not stimulated C- peptide.

CONCLUSION
We have shown that most young-onset T2DM have adequate beta cell function during their early course of disease despite insulin therapy. A markedly elevated C-peptide level in those with a metabolic syndrome phenotype and nephropathy may suggest insulin resistance as the key driving factor during early disease. Further studies measuring insulin resistance in this population may help confirm this finding.